



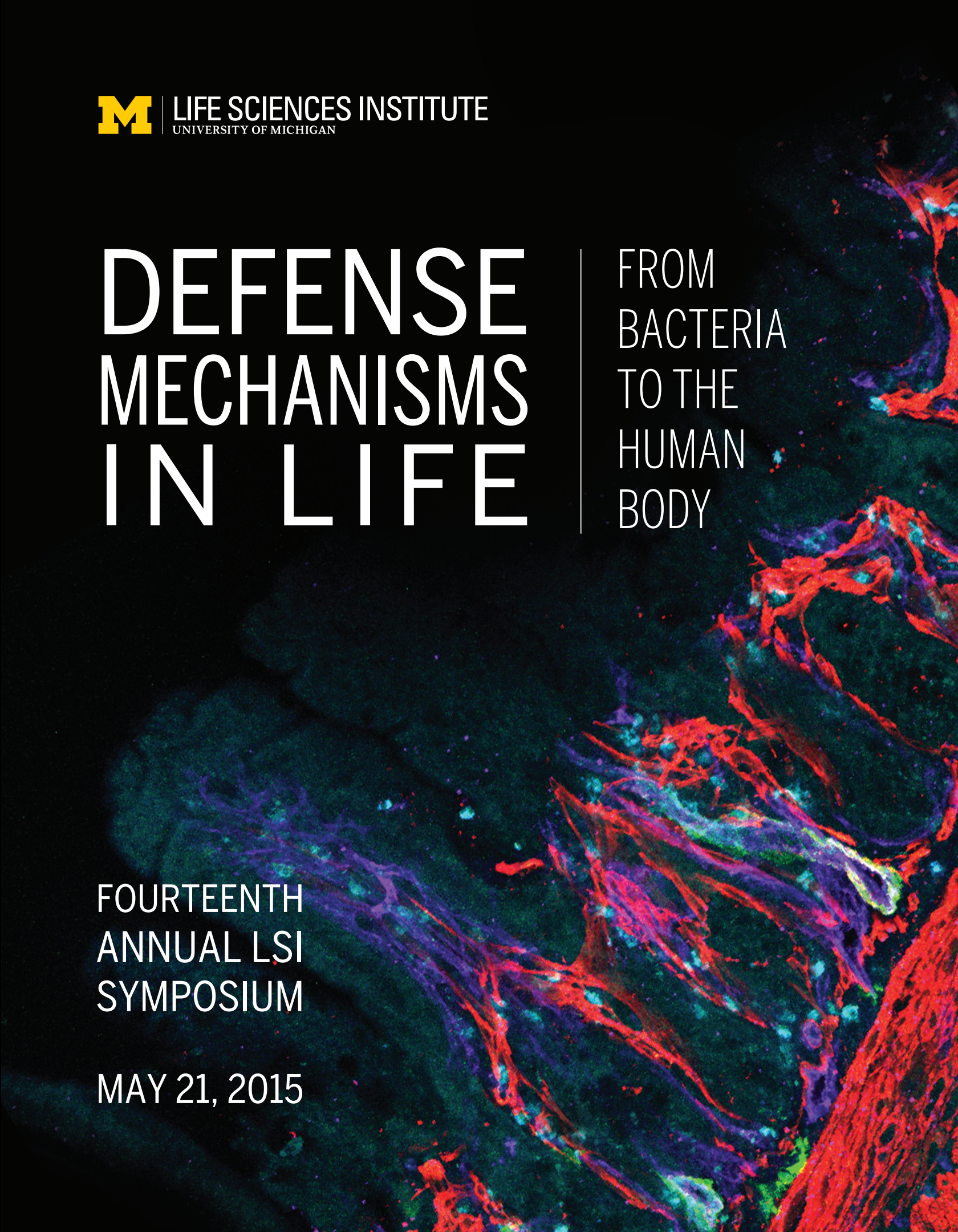
LIFE SCIENCES INSTITUTE
UNIVERSITY OF MICHIGAN

DEFENSE MECHANISMS IN LIFE

FROM
BACTERIA
TO THE
HUMAN
BODY

FOURTEENTH
ANNUAL LSI
SYMPOSIUM

MAY 21, 2015





Images courtesy
of Katherine D.
Walton, research
investigator, and
Deborah Gumucio,
professor,
Department of Cell
and Developmental
Biology, U-M Medical
School

SCHEDULE

FORUM HALL, PALMER COMMONS (OVERFLOW SEATING AVAILABLE IN GREAT LAKES NORTH)

8:30 A.M.

WELCOME | **Alan Saltiel, Ph.D.**

Mary Sue Coleman Director of the Life Sciences Institute

8:35 A.M.

INTRODUCTION OF THE MARY SUE AND KENNETH COLEMAN LIFE SCIENCES LECTURER | **Mary Sue Coleman, Ph.D.**

President Emerita

8:50 A.M.

MARY SUE AND KENNETH COLEMAN LIFE SCIENCES LECTURE: HOMEOSTASIS, INFLAMMATION AND DISEASE | **Ruslan Medzhitov, Ph.D.**

David W. Wallace Professor of Immunobiology, Yale School of Medicine; Investigator, Howard Hughes Medical Institute

MORNING BREAK

10:30 A.M.

GENERATION OF A MEMORY OF INFECTION DURING CRISPR-CAS IMMUNITY | **Luciano Marraffini, Ph.D.**

Assistant Professor, head of the Laboratory of Bacteriology, Rockefeller University

11:10 A.M.

MECHANISMS AND FUNCTIONS OF RNA SILENCING PATHWAY | **Phillip D. Zamore, Ph.D.**

Co-Director, RNA Therapeutics Institute; Gretchen Stone Cook Chair of Biomedical Sciences; Professor, Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School; Investigator, Howard Hughes Medical Institute

LUNCH

1:15 P.M.

ROLE OF THE MICROBIOTA IN INFECTION CONTROL AND SEQUELAE | **Yasmine Belkaid, Ph.D.**

Chief of Mucosal Immunology Section, Laboratory of Parasitic Diseases, National Institutes of Health, National Institute of Allergy and Infectious Diseases

1:55 P.M.

IMMUNE REGULATION OF INTESTINAL HEALTH AND DISEASE | **Gregory F. Sonnenberg, Ph.D.**

Assistant Professor of Microbiology and Immunology in Medicine, Weill Cornell Medical College

AFTERNOON BREAK

3:15 P.M.

TISSUE CONTROL OF MACROPHAGE HOMEOSTASIS AND FUNCTION | **Miriam Merad, M.D., Ph.D.**

Professor of Oncological Science and Medicine; Mount Sinai Chair in Cancer Immunology; Director of Human Immune Monitoring Center, Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai

3:55 P.M.

INNATE LYMPHOID CELLS IN IMMUNITY | **Marco Colonna, M.D.**

Robert Rock Belliveau, M.D., Endowed Professor, Department of Pathology and Immunology, Washington University School of Medicine

4:50 P.M.

CLOSING REMARKS | **Alan Saltiel, Ph.D.**

Mary Sue Coleman Director of the Life Sciences Institute

LIGHT REFRESHMENTS WILL BE AVAILABLE IN THE ATRIUM DURING BREAKS. ATTENDEES ARE ON THEIR OWN FOR LUNCH.

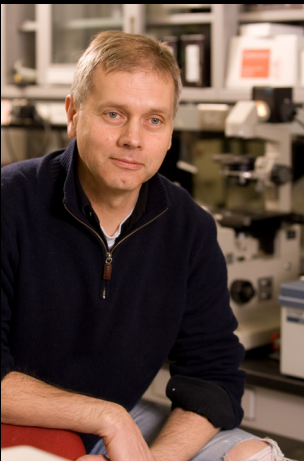
SPEAKER BIOGRAPHIES



Yasmine Belkaid, Ph.D.

Chief of Mucosal Immunology Section, Laboratory of Parasitic Diseases, National Institute of Health, National Institute of Allergy and Infectious Diseases

Yasmine Belkaid obtained her Ph.D. in 1996 from the Pasteur Institute in France on innate responses to *Leishmania* infection. Following a postdoctoral fellowship at the National Institute of Allergy and Infectious Diseases (NIAID) on immune regulation during *Leishmania* infection, she joined the Children's Hospital Research Foundation in Cincinnati as an assistant professor in 2002. In 2005, she joined the Laboratory of Parasitic Diseases as a tenure-track investigator. Since 2008, she has worked as an adjunct professor at the University of Pennsylvania. Her major areas of research include: the role of the microbiota in immunity to infection; the role of dietary metabolites in promoting immune regulation and immune responses to pathogens; tissue-specific regulatory responses to infection; and *Leishmania major*, *Toxoplasma gondii*, *Cryptosporidium* and *Microsporidium* species.



Marco Colonna, M.D.

Robert Rock Belliveau, M.D., Endowed Professor, Department of Pathology and Immunology, Washington University School of Medicine

Marco Colonna was born in Parma, Italy. He received his medical degree and his specialization in Internal Medicine from the University of Parma. After a postdoctoral training at the Dana-Farber Cancer Institute and Harvard Medical School, he became a scientific member of the Basel Institute for Immunology in Basel, Switzerland, a leading center for immunology research. Since 2001, he has been a professor of pathology and immunology at the Washington University School of Medicine in St. Louis, Missouri. Colonna's laboratory is broadly interested in human innate immune responses during infections, autoimmunity and cancer. The laboratory generates mouse models to test hypotheses *in vivo*, and to provide proof-of-principle for interventions with the potential to be translated to human diseases. His current areas of research include: innate lymphoid cells in mucosal immunity; plasmacytoid dendritic cells and IFN- α/β in host defense and autoimmunity; innate immune mechanisms in Alzheimer's disease.



Luciano Marraffini, Ph.D.

Assistant Professor, head of the Laboratory of Bacteriology, Rockefeller University

Luciano Marraffini undertook his undergraduate studies in Rosario, Argentina. He did his doctoral work at the University of Chicago, followed by postdoctoral studies at Northwestern University. Since 2010, he has been an assistant professor and head of the Laboratory of Bacteriology at The Rockefeller University in New York City. He is a pioneer in the study of prokaryotic adaptive immunity conferred by CRISPR-Cas loci. His research focuses on understanding the molecular mechanisms of CRISPR-Cas immunity and its role in the control of horizontal gene transfer between bacteria.



Ruslan Medzhitov, Ph.D.

David W. Wallace Professor of Immunobiology, Yale School of Medicine; Investigator, Howard Hughes Medical Institute

Ruslan Medzhitov obtained his undergraduate degree from Tashkent State University in 1990 and his doctoral degree from Moscow State University in 1993. He began his career as a visiting student at the University of California, San Diego, and in 1994, he became a postdoctoral associate with Howard Hughes Medical Institute working with Charles A. Janeway, Jr., M.D., at Yale University School of Medicine. Medzhitov became an assistant professor in 1999 at Yale University School of Medicine in the section of immunobiology. He is currently the David W. Wallace Professor of Immunobiology at Yale University School of Medicine and an investigator of the Howard Hughes Medical Institute. His research interests include the biology of inflammation, innate immunity, mechanisms of allergic reactions, cell signaling and gene regulation. Medzhitov is a member of the National Academy of Sciences, Institute of Medicine, and European Molecular Biology Organization, and he is a fellow of the American Academy of Microbiology.

SPEAKER BIOGRAPHIES



Miriam Merad, M.D., Ph.D.

Professor of Oncological Science and Medicine; Mount Sinai Chair in Cancer Immunology; Director of Human Immune Monitoring Center, Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai

Miriam Merad was trained as an oncologist in France and obtained her Ph.D. in immunology at Stanford University and Paris Diderot University. She was recruited to the Mount Sinai School of Medicine in 2004 and was promoted to the rank of associate professor in 2007, then to professor in 2010. Also In 2010, Merad became the program leader of the cancer immunology and immunotherapy group at The Tisch Cancer Institute and the director of the Human Immune Monitoring Center, whose goal is to identify novel immune biomarkers of disease and response to therapy in patients with cancer and allergic disease. Merad's laboratory studies the mechanisms that regulate the development and function of innate myeloid cells including dendritic cells and macrophages. One of the major goals of her laboratory is to identify the contribution of these cells to the development and progression of tumor cells.



Gregory F. Sonnenberg, Ph.D.

Assistant Professor of Microbiology and Immunology in Medicine, Weill Cornell Medical College

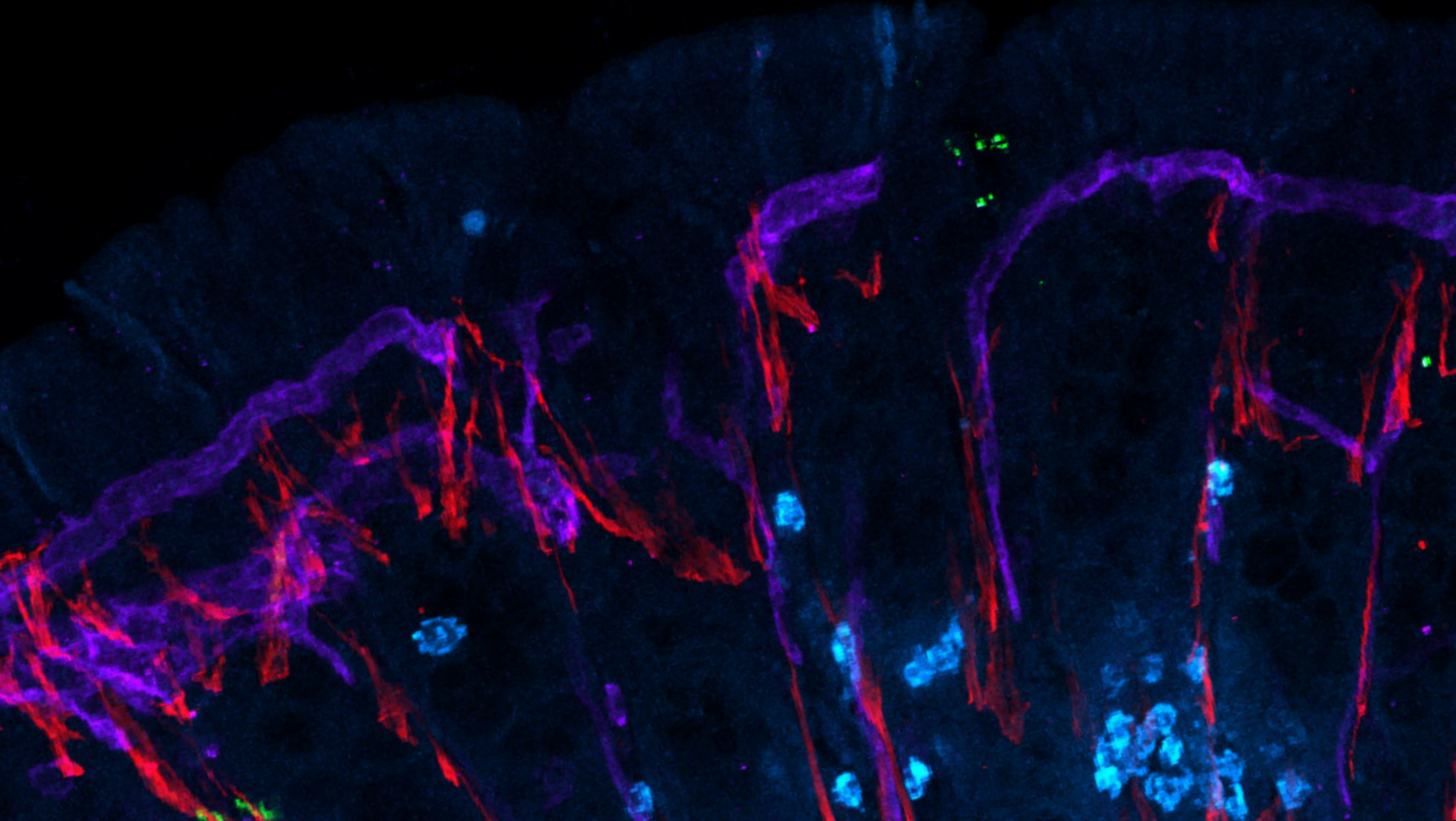
Gregory F. Sonnenberg received his undergraduate degree in 2007 from the State University of New York at Buffalo and earned his Ph.D. in 2011 from the University of Pennsylvania. Sonnenberg studies how interactions between the mammalian immune system and commensal bacteria can regulate health and disease in the gastrointestinal tract. The main goals of his lab are to interrogate the pathways that regulate normally beneficial host interactions with commensal bacteria; to determine how these pathways become disrupted in chronic human diseases; and to identify novel therapeutic targets to prevent or limit dysregulated host-commensal bacteria relationships in human disease. His current focus is on recently identified populations of intestinal-resident innate lymphoid cells (ILCs), which have been found to be critical regulators of cytokine-mediated intestinal epithelial cell responses that promote immunity to extracellular bacteria, inflammation, and tissue repair in the intestine.



Phillip D. Zamore, Ph.D.

Co-Director, RNA Therapeutics Institute; Gretchen Stone Cook Chair of Biomedical Sciences; Professor, Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School; Investigator, Howard Hughes Medical Institute

Phillip D. Zamore studied biochemistry and molecular biology at Harvard University, receiving his A.B. in 1986 and Ph.D. in 1992. Zamore then pursued postdoctoral studies on the role of RNA-binding proteins in *Drosophila* development jointly with Ruth Lehmann, Ph.D., and David Bartel, Ph.D., at the Whitehead Institute for Biomedical Research, and James Williamson, Ph.D., at the Massachusetts Institute of Technology. He is currently an investigator with the Howard Hughes Medical Institute and the Gretchen Stone Cook Chair of Biomedical Sciences at the University of Massachusetts Medical School, where he is managing co-director of the RNA Therapeutics Institute. His laboratory studies small RNA silencing pathways in eukaryotes and prokaryotes, including the RNA interference (RNAi), microRNA, and PIWI-interacting RNA pathways. Zamore and his collaborators seek to use these insights to design therapies for human diseases, including Huntington's disease.



ABOUT THE LIFE SCIENCES INSTITUTE

The Life Sciences Institute is a nucleus of interdisciplinary biomedical research at the University of Michigan. LSI faculty members conduct research in their labs in the institute and hold academic appointments in other schools or colleges at U-M, including the Medical School, College of Pharmacy, College of Literature, Science and the Arts, and in departments including Chemistry, Cell and Developmental Biology, Physiology, Human Genetics, Bioinformatics, Hematology and Oncology, and Medicinal Chemistry.

ABOUT THE ANNUAL SYMPOSIUM

In 2002, while construction of the institute was still underway, the LSI held its first symposium. The event continues to represent the LSI's most important values: excellence in science, investment in high-impact research, and especially the synergy that happens when top scientists from a range of fields meet and share their work around a common theme.

PAST SYMPOSIA

2014 Victors for Discovery: Biomedicine at Michigan
2013 Exploring Epigenetics and RNA
2012 Development and Diseases of the Nervous System
2011 Autophagy
2010 Macromolecular Complexes in Cell Biology
2009 Evolutionary Biology
2008 Focus on Chemical Biology

2007 Frontiers in Stem Cell Biology
2006 Molecular Insights into Metabolic Disease
2005 Cancer Insights: Molecules to Medicine
2004 Exploring the Complexity of Life
2003 Genetic Insights into Biology and Disease
2002 Structural Biology of Cell Signaling



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